

## Investigation of the Relation between Disclosure of Intellectual Capital and Investment Costs with Regard to Technology Factor in the Listed Companies in the Stocks Exchange of Tehran

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### Abstract

In the industrial age, capital meant physical and financial capitals or tangible assets of a company. But in the present era, the paradigm of intellectual capital is stated as the most valuable asset and creator of competitive advantage of companies which is resulted from science and knowledge. Companies try to reduce their capital costs by volunteer disclosure of these assets. Based on this, the main purpose of this study is to investigate the relation between disclosure of intellectual capital and investment costs (the costs of shareholders' rights and liability costs) of the listed companies in the Stocks Exchange of Tehran. The studied period is 2007-2011 and the selected sample includes 40 companies. The findings of testing the research hypotheses using Multivariate Regression Method show there is no negative relation between disclosure of intellectual capital and capital costs (the costs of shareholders' rights and liability costs). Influencing the factor of technology and classification of companies to high and low technology companies and also as modifier factor the obtained results from testing hypotheses have not changed. And the existence of negative relation between disclosure of intellectual capital and capital costs with the impact of the factor of technology is not proved.

**Keywords:** Disclosure of Intellectual Capital; Costs of Shareholders' Rights; Liability Cost; Technology; Stocks Exchange of Tehran.

### Introduction

With the movement of communities from industrial age to information age, the importance of intellectual capitals has increased (Guthrie, 2001). Because there are lots of evidences that show incentives of creation of value is in intellectual capital of companies instead of being in physical and financial capitals of companies (Skinner, 2008). While intellectual capital is deemed as one of the important factors in the creation of value in companies (Bethi and Thomson, 2007), the involved costs with intangible assets (intellectual capital) is immediately recorded in financial statements or are terminated by themselves and consequently are not reflected suitably in the financial statements. For example, intangible assets (new) like staff merits, customer relation with office and computer systems are unknown in traditional financial reports (Guthrie et al. 2007). It seems that the disclosure of intellectual capital is necessary in financial statements because investors have more tendencies for investment in companies which have disclosure rate or have lower risks (Dastgir and Bazzaz Zadeh, 2003). More disclosure via reduction in transaction costs and also with increase of demand for securities increase stocks market and consequently reduce capital costs (Botosan, 1997). A main discussion in disclosure of information of companies' intellectual capitals is whether capital markets react for analysis against the dissemination and report of intellectual capital or not. And also whether the supplementary information presented by financial statements satisfies their information needs or not. Reporting and disclosure of intellectual capital will have remarkable impacts on the decisions of different benefactors within and outside organization (Barzgar, 2009). About the

resulted consequences from more disclosure of intellectual capital this question (do companies benefit from reduction of capital costs by more disclosure?) remains a controversial issue. Though many studies have attempted to answer this question, most of the previous studies show the presentation of the lack of definite results and totally focusing of general disclosure (Botosan, 1997; Bushee and Noe, 2000; and Botosan and Plumly, 2002). Still, few researches have dealt with the direct relation between disclosure of intellectual capital and capital costs. Regarding the difference of Iran's rate of technology and that of countries in which these researches have been done and the conditions of stocks market of Tehran, this study deals with the above issue.

### **Research theories**

#### ***Intellectual Capital and its Disclosure***

John Conte (Galberite-economist) was the first person who used the term intellectual capital in 1969. But the term intellectual capital entered the world literature of business for the first time in 1990s and Fortune magazine presented the role and importance of intellectual capital for its readers in 1991 by publishing a paper by Tom Stewart under the title "Power of Mind" (Haji Karimi and Bathaie, 2009). The concept of intellectual has always been ambiguous and different definitions are used for interpreting this concept (Ahmadi et al. 2011). Intellectual capital includes knowledge, information, intellectual assets, and experience that can be used for creating wealth. Intellectual capital is collective mental abilities or key knowledge in form of a set (Stewart, 1997; qtd. in Alam Tabriz et al. 2009). Nevertheless, there is no comprehensive classification about intellectual capitals like the definition of intellectual capital (Haji Karimi and Bathai, 2009). It seems that there is a common belief that intellectual capital includes three categories: human capital, structural capital, and relational capital (Guthrie and Pethi, 2000; Leu and Gambon, 2003; Boedker et al. 2005). Human Capital: includes knowledge, skills and abilities of the staff. This kind of capital is the ability and qualifications of human forces for solving issues and problems of organization. Human capital is an inseparable part of staff and cannot be owned by organization. Therefore, when the staff leaves organization, it disappears (Bhartesh and Bandyopadhyay, 2005). Internal capital is related to the mechanism and structure of a business unit and can help staff in better mental performance and consequently the organization can be able to better its performance (Chen et al. 2004). External capital is deemed as a bridge and organizer of operations of intellectual capital and is a determining factor in changing intellectual capital to market value (Chen et al. 2004).

The first report of intellectual capital was created in Scandia Company in 1994 by Lif Edison which was a turning point in the history of intellectual capitals. The definition which Ebiskera and Guthrie (2002) presented about the disclosure of intellectual capital is: a significant report for responding general information needs of users who are not able to satisfy their need of information especially in providing reports about proper intellectual capital. But so far there is no accepted guide and framework created at international level for reporting intellectual capital. Some of pioneer companies like Scandia have begun disseminating such reports. European companies especially are leading companies in measuring and reporting intellectual capital (Alam Tabriz et al. 2009).

#### ***Capital Cost***

The cost of capital is not genuinely cost in its real sense in accounting but this cost is the efficiency rate which is expected in proposed long term investment and its minimum is expected. The cost of capital is a suitable concept in financial analysis and it should not be deemed that such thing can be met in accounting offices (Weston et al. qtd in Abde Tabrizi and Hanifi, 2003).

The expected efficiency of any investment with its risk level has a fundamental relation and the possibility of the real efficiency of an investment being less than the expected efficiency, is called risk (Hampton et al. qtd in Vakili Fard, 2011). And efficiency is the reward that an investor

gains in an investment (Tehrani, 2008). Every company has its own efficiency and risk and financial resources of company are provided by common stocks owners (in the form of capital and retained wealth) and preferred stocks and security owner and each one of them ask efficiency equal to their risk; provision of this efficiency is cost for company; therefore, company's capital cost can be defined as the least efficiency that the company should gain to be able to provide the expected efficiency of investors and owners of liabilities (Tehrani, 2008). Capital cost is utilized in relation to the process of budgeting company and also reduction and judging about different investment projects (Raymond P. Noe; qtd in Jahankhani and Pasaeian, 2011).

The owners of various securities of company (like bonds, preferred stock, common stocks, and retained earnings) expect their own rate of efficiency and consequently have their own especial cost of capital. Capital cost of every specific source of funding (issued securities) is called specific items of capital like cost of liabilities, cost of preferred stocks, cost of common stocks, and the cost of gained earnings from saving profits (Raymond P. Noe; qtd in Jahankhani and Pasaeian, 2011).

Specific cost of common stocks is the minimum efficiency that company should pay owners of common shares in order to preserve the value of the company's stocks (Raymond P. Noe; qtd in Jahankhani and Pasaeian, 2011).

Cost of liability: since most of long term liabilities of a company are in form of bond, measurement of the cost of liabilities is done with regard to the characteristics of bonds. Estimation or determination of specific cost of liabilities requires measuring the effective cost of liabilities of the company and this effective cost should be stated based on the annual rate. This can be done using the efficiency rate up to the due date. The efficiency rate up to the due date or the internal efficiency rate expected by the buyers determines the rate of effective liability cost before paying taxes for company (Raymond P. Noe; qtd in Jahankhani and Pasaeian, 2011).

## **Review of literature**

### ***National Studies***

No research has been dealt with the impact of disclosure of intellectual capital in Tehran's Stocks Market so far but some studies are done about intellectual capital and disclosure and capital cost of which follows:

Dastgir and Bazzaz Zadeh (2003) dealt in a research with the investigation of the impact of disclosure rate (compulsory) on the cost of common stocks that the findings of the so called research on 40 samples including manufacturing companies listed in Stocks Exchange of Tehran show that the increase in rate of disclosure reduces the cost of common stocks. In other words, investors have more tendencies for investment in companies with higher disclosure or lower risk.

Madhoshi and Asghar Nejad Amiri (2009) dealt in a research with evaluation of intellectual capital and investigation of its impact of financial efficiencies of companies and its findings show that there is a positive significant relation between intellectual capital and financial efficiency, between intellectual capital and future financial efficiency, growth rate of intellectual capital and growth rate of future financial efficiency of investment companies in Stocks Exchange of Tehran.

Setayesh, Kazem Nejad, and Zolfaghari (2011), in a research under the title "Investigation of Impact of Quality of Disclosure on Liquidity of Shares and Capital Cost in the Listed Companies in Stocks Exchange of Tehran" is controlled paralleled with the impact of size of company. The findings of investigation of 105 companies demonstrated that there exists a positive and significant relation between the size of company and current and future liquidity but there is no significant relation between quality of disclosure and current and future liquidity. Additionally, there is a negative and significant relation between quality of disclosure and cost of current and future

common share capital. Therefore, no evidence was seen about the existence of a significant relation between size of company and cost of current and future common share capital.

Malekian et al. (2011) dealt in a research with the investigation of relation of quality of disclosure on cost of capital of the listed companies in Stocks Exchange of Tehran that its findings demonstrate that there exists a negative and significant relation between corporal quality of disclosure and cost of capital.

### ***International Studies***

Sengupta (1998) studied in a research the relation between quality of disclosure and cost of liability and he found out in his investigations that companies with higher quality of disclosure profit from less cost of liability compared to companies with less quality of disclosure.

Welker & Richardson (2001) dealt with the investigation of the impacts of two kinds of financial and social disclosure on the cost of capital in Canadian companies that they found out about the existence of a negative relation between cost of liability and financial disclosure. Still, they admitted a positive relation between cost of capital and social disclosure. According to their findings, companies which disclose more social information are punished by market.

Francis et al (2005) expanded the researches and dealt with the investigation of the relation between cost of capital and disclosure in an international environment using a sample of companies from 34 countries. As a result, they found some evidences that show companies with more need of foreign funding reduce their cost of capital with such extensive disclosure by more disclosure of information.

Singh & Van der Zahn (2007) dealt in a research with the investigation of the relation between disclosure of intellectual capital and low pricing (numerator) in initial public offering of shares in some companies in Singapore. Regardless of theoretical predictions, they noticed a positive relation between low pricing (numerator) and rate of disclosure of intellectual capital. However, they used low pricing (numerator) in the initial public offering of shares instead of direct use of cost of capital.

Kristandl and Bontis (2007) dealt in a research with an investigation of impacts of the disclosure of intellectual capital on cost of capital in 95 companies which are listed in Stock Exchanges of Austria, Sweden, Germany, and Denmark and, classifying volunteer disclosure of historical and futuristic information, they noticed a negative predicted relation between futuristic information level and cost of capital, but an unpredicted positive relation between level of historical information and cost of capital were also found by them. The problem of this study was that this was done only with a limited number of information items of intellectual capital and financial information which only did include information of stocks market. In addition, some other issues like financial interaction and disclosure of individual intellectual capital on the cost of capital were not considered.

Wang et al (2010) dealt in a project in Scotland with the investigation of the relation between disclosure of intellectual capital and cost of capital that their results show that companies which disclose more intellectual capital profit due to less expenses of capital compared to companies which use lesser level of disclosure of intellectual capital. This study estimates this profit to be remarkable.

Yee Mei Lee and Rosalind H (2011) did a research under the title Technology, Disclosure of Intellectual Capital, and Cost of Capital and its findings show that non deterministic results have been obtained from the relation between cost of capital and disclosure of intellectual capital, but the disclosure of human capital compared to that of national and international capital have more impacts on the change in cost of capital; furthermore, no kind of restricting impacts from technology force were observed on the relation of cost of capital and disclosure of intellectual capital.

### **Research hypotheses**

Hypothesis 1: level of disclosure of intellectual capital has a negative relation with the cost of equity in the next year.

Hypothesis 2: level of disclosure of intellectual capital has a negative relation with the cost of liability in the next year

Hypothesis 3: the intensity of technology has a modifying impact on the relation between disclosure of intellectual capital and cost of equity in the next year.

Hypothesis 4: the intensity of technology has a modifying impact on the relation between disclosure of intellectual capital and cost of liability in the next year.

### **Methodology**

This research is of descriptive-correlation type in the area of accounting demonstration researches; it is also a functional research regarding classification of researches based on goals of study. Since the data for analysis and transformation to usable data for decision making is used after financial events, recording events in offices, and providing financial statements and is based on done truth; therefore, it is a post-event research (using historical information). Multivariate regression method is used for investigation of the relations among dependent and independent variables. For testing the research hypotheses, information is obtained in the form of field study and from different resources like Dena Sahm Software, New Strategy Software, Stocks Website, website of Iranian Research for Scientific Information and Documentation, Website of Research, Development.

#### ***Statistical Population and Sample***

The statistical population of the present research is all the listed companies in Stocks Exchange of Tehran from 2007 to 2011. Sampling screening method (systematic elimination) is used in this research for determining the sample of the study. Therefore, companies with following characteristics are selected:

1. This company should be listed in Stocks Exchange of Tehran since the beginning of 2007 to the end of 2011.
2. Information related to these companies should be available during the course of the research.
3. These companies should be active companies in bourse during the investigation. This means that during the course of the research their share trading should not be stopped more than three months.
4. For increasing the comparability, the financial year of these companies should be finished by the end of Esfand.
5. Regarding the calculation of division of research cost and development to sale for classification of companies to companies with high and low technology it is necessary that these companies be business and manufacturing types. Therefore, servicing, investment, financial intermediary, and holding companies are not to be placed in the research sample.

In this accord, 40 companies, from different industries, which had the abovementioned features are selected as sample from all companies of the population.

#### ***Analysis Method***

For testing statistical hypotheses, first the accuracy of hypotheses of regression model is investigated and then, using F and t tests, the existence of impact or role among dependent and independent variables are tested. In this research, F-statistic is used for investigation of the relation between dependent and independent variables and significance of regression equation. If the F-statistic calculated from regression equation in the confidence level of %95 ( $\alpha = 5\%$  error) be less than the F measure obtained from the table, the regression equation is significant. Then, using t-statistic, the significance of each coefficient in confidence level of %95 ( $\alpha = 5\%$  error) is calculated.



To compare the fitness of regression equations R2 measure is calculated. Kolmogorov-Smirnov Test (K-S) is used for normality test of data. In this model, if data is not normal, Ln (V) is used instead of primary data for normalizing the data. Durbin-Watson test is used for investigation of independence of errors (the difference between real measures predicted by regression equation) in different periods. And if obtained measures are between 1.5 and 2.5, it can be concluded that error measure are random and the hypothesis of autocorrelation among estimated models error is rejected.

### ***Research Variables***

Variables in this research include disclosure of intellectual capital as independence variable, equity cost and liability cost as dependent variable, size of company, financial gear, proportion of market value to office value, dispersion of analysts' forecasts, income variance, and systematic risk as control variables, technology as modifier variable which all are described as follows.

#### ***Independence Variable***

Disclosure of intellectual capital: for calculation of the rate of intellectual capital disclosure 18 items of Guthrie et al (2003) are used which are presented in the board's report and the manager's in annual report. For this analysis in proportion to each of these 18 items which are presented in mentioned three category are developed that show the importance of this subject and measurement is done with the guidances which are in writings of Guthrie et al. and in case of two grades being quantitative and in case of one grade being qualitative and in case that there is nothing stated, it is assumed zero. At that time, scoring is done with the sum of grades of the 18 items and the rate of intellectual capital disclosure is identified.

#### ***Dependent Variables***

##### ***- Equity Cost***

One of the methods of estimation of equity cost is calculation of internal efficiency rate that is equal to the proportion of the future cash currents expected by market to current price of shares. The main methods in this category are: 1) Residual income valuation (RIV) model (Gebhardt et al. 2001), 2) Abnormal Earnings Growth (AEG) Model (Gode and Mohanram, 2003), and 3) Price/Earnings To Growth (PEG) (Easton, 2004).

In this research, following Mangna et al. (2010) and Li et al. (2011), Easton's Model (2004) is used with (PEG). It is because this make the findings of this research comparable with those of others. In (PEG) model the equity cost is as Inverse square root in proportion to price and defines as follows:

$$k_{et+\delta t} = \sqrt{((eps_2 - eps_1) / p_o)}$$

in which

Ket+st= the cost of capital used in company after the time of annual report

Eps2= average predicted value of all the final income of experts in future two years the time of annual report

Eps1= average predicted value of all the final income of experts in future one year the time of annual report

P0= price deviation in the time of annual report

- liability cost

In the present research, for obtaining the cost of liability, following Orens et al. (2009) and also Yimili and Rosalnd H (2011), the result of deviation of liability cost at the end of year to total short term and long term liability are used.

$$k_{dt+1} = \frac{Int\ Exp}{\sum STD + LTD}$$

$K_{t+1}$  = liability cost of company in the next year (t+1)

Int Exp = interest cost at the end of year t+1

STD = short term financial liability at the beginning of the year t+1

LTD = long term financial liability at the beginning of the year t+1

#### *Control Variables*

##### *- Size of Company*

The relation between size of company and capital cost is negative and the more the size of company, the less its cost of capital. In fact, according to studies of Batson (1997) and Sangopta (1998) small size of company leads to increase of capital cost. Therefore, for calculating the size of company in this research, following Yimili and Rosoland H (2011), natural algorithm of total assets at the end of the year is used.

LOGAsset = natural algorithm of total assets at the end of each year

##### *- Financial gear*

Financial gear in this research is obtained from the division of total liabilities to total assets.

According to the studies of Sangopta (1998), gear has direct relation with capital cost. Because the more the gear be higher, in fact the more company's liabilities in proportion to company's assets and consequently company's risk goes higher and capital cost increases.

##### *- Systematic Risk*

Betha (B) is the measurement criterion of systematic risk of securities. It can be said that betha is the sensitivity coefficient in contrast to changes in markets efficiency. Betha coefficient is calculated as follows (Tehrani, 2008):

$$\beta = \text{Cov}(x, m) / \sigma_m^2$$

in this equation Cov x,m = covariance between share efficiency and market's efficiency  $\sigma_m^2$  = variance of market's coefficient

According to studies of Batson (1997) there exists a positive relation between company's systematic risk and its capital cost and the capital cost increases by the increase of systematic risk.

##### *- Market value to office value*

This variable, following the review of literature, share market value of company at the end of the year to the office value of equity at the end of the year is obtained.

Sangopta (1998) demonstrated in his research that there exists a negative relation between market value to office value and capital cost. He demonstrated that the less the proportion of market to office value, the more the uncertainty about the future growth of company and this uncertainty leads to higher risk and therefore increases capital cost.

##### *- Dispersion of Analysts' forecasts*

For this, prediction of profit of each share (pps) is used from the difference between the profits of each share (esp).

##### *- variability of profit*

Algorithm of change percentage in the profit of each share in two consecutive years is used for calculating of variability of profit or variety of profit; in fact the proposed year and the previous year.

The variability of profit has a direct and positive relation with capital cost. Because variability of profit, since more uncertainty about continuity of future income (Jaji and Jin, 1998; Graham et al. 2005; Orense et al. 2009) among investors, therefore, more risk means for these investors and more risk leads to increase of capital cost.

#### *Modifier Variable*

Modifier variable in this research is technology. Therefore, based on different definitions of technology, identification of companies is done by companies with high and low technology; these

are deemed as technology factors like some largeness of company's size, some machinery, a group high cost of research section and company's development, some the number of much usage of computer software and hardware and etc. but, since the patterns and many items are considered for technology, following Danaie et al. (1997), the proportion of research and development to sale of identification factor of company, to companies with high and low technology are identified in this research.

Based on previous researches, small companies whose active industries are based on research and developmental activities, pay more capital cost compared to their bigger rivals and also other industries (Hall, 2002; qtd in Mashayekhi et al. 2011).

## Results

### *Descriptive Statistic*

**Table (1): descriptive statistics of research variables**

Statistic Index Variables	Observations	Min	Max	Mean	SD	Range change	Skewness	Elongation
Equity cost	200	0/00	1/00	0/15	0/17	1/00	1/97	4/34
Liability cost	200	0.00	114.00	67.7244	21.31538	114.00		
Disclosure	200							
Size of company	200							
Forecast dispersion								
Financial gear	200							
Market value/office value								
Variability	200							

Regarding the obtained descriptive statistics from SPSS output, standard deviation, skewness coefficient, and elongation and the fact that the obtained numbers are not less than -2 and more than +2, it can be judge about the normality of population.

### *Inferential Statistics*

Hypothesis 1: level of disclosure of intellectual capital has a negative relation with the cost of equity in the next year.

**Table (2): results obtained from regression**

$K_{et+\hat{\alpha}} = \alpha + \beta_1 DIS_t + \beta_2 SIZE_t + \beta_3 LEV_t + \beta_4 AFD_t + \beta_5 MB_t + \beta_6 EV_t + \beta_7 SR_t + e$				
p-value=.000		9.124=F statistic		method Enter
result	P-value	T statistic	coefficient 2.169	Descriptive variables
-	.541	.613	11.204	Fixed measure
-	.777	-.283	-1.293	DIS
-	.969	-.039	-.230	Size
-	.067	1.844	.246	Lev
significant	.000	3.968	11.163	AFD
significant	.034	-2.138	-1.66	MB
-	.958	-.053	-.483	EV
-	.103	-1.639	-.207	SR
2.169=D.W		R	.389	151 (modified) =R2



(F) Test: with regard to the table, it is observed that the measure p-value=0/000 is less than %5 in the confidence level of %95. Therefore, the regression model is significant and the assumption of linearity of the model is affirmed.

(T)Test: the t-statistic and p-value of DIS variable show the rejection of the hypothesis in 0/95 confidence level. Therefore, high F and R2 and small t are not observed in the results; thus, there is no correlation between independent variables. Simply put, regarding the significance level of hypothesis that (p-value= 0/777) represents the lack of impact of independent variable (level of intellectual capital disclosure) on dependent variable (equity cost in the next year).

Hypothesis 2: level of disclosure of intellectual capital has a negative relation with the cost of liability in the next year

**Table (3): results of regression**

$K_{dt+1} = \alpha + \beta_1 DIS_t + \beta_2 SIZE_t + \beta_3 LEV_t + \beta_4 AFD_t + \beta_5 MB_t + \beta_6 EV_t + e$				
p-value=.000		7.045=F statistic		method Enter
Results	P-value	t-statistic	coefficient 2.169	Descriptive variables
-	.633	-.479	-.826	Fixed measure
-	.087	2.071	.287	DIS
significant	.037	-2.104	-.217	Size
Significant	.014	2.493	.646	Lev
significant	.005	2.827	.341	AFD
-	.900	.126	.116	MB
-	.633	-.479	-.826	EV
1.677=D.W		R	.389	204( modified) =R2

(F) Test: with regard to the table, it is observed that the measure p-value=0/000 is less than %5 in the confidence level of %95. Therefore, the regression model is significant and the assumption of linearity of the model is affirmed.

**Table (4): results of regression**

$K_{et+\delta} = \alpha + (\beta_1 + \beta_2 T)DIS_t + \beta_3 T_t + \beta_4 SIZE_t + \beta_5 LEV_t + \beta_6 AFD_t + \beta_7 MB_t + \beta_8 EV_t + \beta_9 SR_t + e$				
p-value=.000		4.124=F statistic		method Enter
Result	P-value	t-statistic	coefficient 2.169	Descriptive variables
significant	.000	-7.608	-14.482	Fixed measure
-	.563	.581	.089	DIS
significant	.036	-2.122	-.250	T
-	.135	1.506	.433	Size
significant	.006	2.825	.390	LEV
significant	.000	13.493	13.767	AFD
significant	.000	-7.608	-14.482	MB
-	.563	.581	.089	EV
-	.214	.543	.042	SR
1.887=D.W		R	.389	211 ( modified) =R2

(T)Test: the t-statistic and p-value of DIS variable show the rejection of the hypothesis in 0/95 confidence level. Therefore assumption H1 is rejected and hypothesis # 2 of the research is not affirmed according to model. High F and R2 and small t are not observed in the results; thus, there is

no correlation between independent variables. Simply put, regarding the significance level of hypothesis that (p-value= 0/087) represents the lack of impact of independent variable (level of intellectual capital disclosure) on dependent variable (liability cost in the next year).

Hypothesis 3: the intensity of technology has a modifying impact on the relation between disclosure of intellectual capital and cost of equity in the next year.

(F) Test: with regard to the table, it is observed that the measure p-value=0/000 is less than %5 in the confidence level of %95. Therefore, the regression model is significant and the assumption of linearity of the model is affirmed.

(T)Test: the t-statistic and p-value of DIS variable show the rejection of the hypothesis in 0/95 confidence level. Therefore assumption H1 is rejected and hypothesis # 3 of the research is not affirmed according to model. High vale F and R2 and small t are not observed in the results; thus, there is no correlation between independent variables. Simply put, regarding the significance level of hypothesis that (p-value= 0/567) represents the lack of impact of independent variable (level of intellectual capital disclosure) on dependent variable (liability cost in the next year) with modifying variable (technology) being present.

Hypothesis 4: the intensity of technology has a modifying impact on the relation between disclosure of intellectual capital and cost of liability in the next year.

**Table (5): results of regression**

$K_{dt+1} = \alpha + (\beta_1 + \beta_2 T)DIS_t + \beta_3 T_t + \beta_4 SIZE_t + \beta_5 LEV_t + \beta_6 AFD_t + \beta_7 MB_t + \beta_8 EV_t + e$				
p-value=.000		5.005=F statistic		method Enter
Result	P-value	t-statistic	Coefficient 2.169	Descriptive variables
significant	0.004	-0.159	-0.149	Fixed measure
-	0.070	1.987	1.077	DIS
significant	0.018	2.379	0.81	T
significant	0.000	-4.419	-1.184	Size
significant	0.001	-3.205	-0.826	Lev
-	0.086	-1.721	-6.22	AFD
-	0.084	1.733	0.261	MB
-	0.874	-0.159	-0.145	EV
1.669=D.W		R	.389	modified(R2)= 0.092

(F) Test: with regard to the table, it is observed that the measure p-value=0/000 is less than %5 in the confidence level of %95. Therefore, the regression model is significant and the assumption of linearity of the model is affirmed.

(T)Test: the t-statistic and p-value of DIS variable show the rejection of the hypothesis in 0/95 confidence level. Therefore assumption H1 is rejected and hypothesis # 3 of the research is not affirmed according to model. Simply put, regarding the significance level of hypothesis that (p-value= 0/070) represents the lack of impact of independent variable (level of intellectual capital disclosure) on dependent variable (liability cost in the next year) with modifying variable (technology) being present.

Durbin-Watson (D.W) Test: this test with the help of SPSS is used in different periods for investigation of independence of errors (the difference between real values and predicted by regression equation. The D.W value obtained in above table is calculated in any test and due to the fact that the obtained values are between 1.5 and 2.5, it can be concluded that that error values are random and the assumption of existence of autocorrelation among errors of estimated model is rejected.

### Discussion and conclusions

Regarding the interpretations above from the findings of statistical test, the first hypothesis about the existence of a relation between disclosure of intellectual capital and equity cost is rejected. This is not in line with the findings of Magna et al. (2010) and Welker and Richardson (2001). However, our findings accord with theory of Public Accountants Society of America (AICPA) and that of Jenkins Committee (qtd in Batson, 1977: p. 338), Beer et al (1994), and Poshak Wall and Cortis (2005). They believe that the present documentation does not firmly prove the assumption of negative relation between level of info disclosure and capital cost.

The second hypothesis of the present research investigates the relation between disclosure (intellectual capital) and financial costs (liabilities). These findings are not in line with that of the researches of Orens et al. (2009); however, they are in accord with those of the similar research done by Yimili and Rosland H (2011).

The third hypothesis of the present research investigates the impact of modification effect of power of technology on the relation between intellectual capital disclosure and equity cost. As the results show, the third hypothesis is not affirmed according to the model. These evidences are not in line with those of the researches by Hsu and Chang (2007) and Mangena et al (2010). Their findings show that the benefits obtained from equity cost is increased with the disclosure of intellectual capital for sections with high intellectual capital in proportion to sections with low intellectual capital.

The fourth hypothesis of the present research investigates the impact of modification effect of power of technology on the relation between intellectual capital disclosure and equity cost. Regarding to the model and hypothesis test, the existence of negative relation between disclosure of intellectual capital and liability cost with modifier factor of technology is not proved. The result of this hypothesis is not in line with that of Hsu and Chang (2007).

Although the theories affirm the existence of a negative relation between disclosure of intellectual capital and equity cost and liability cost, previous researches have not stated the certainty of the issue. Though the findings of the present research are in line with those of the previous researches, what is the reason for contrasts in the obtained results? Regarding the information and knowledge that we have gained during the course of this research about the conditions and characteristics of companies and Stocks exchange and as it is mentioned in the second section, maybe the existence of information rent and the lack of proper performance of Iran's bourse market and high percentage of big and institutional shareholders and lack of people's participation in bourse can be the responds to the abovementioned questions. Regarding the fact that the present discussion is related with information and its presentation, it seems that inefficiency of Iran's bourse market, to explain the obtained results, has more logical base. On the other hand, Shareholders, having the right to control and block-holders in the capital structure and cost of capital between voluntary disclosure due to the influence of shareholders and monitor will affect management actions.

### Suggestions

Regarding the fact that the related researches in Iran are related to the disclosure of fresh intellectual capital and limited number of researches has been done in this regard in Iran, its effective variables in Iran are unknown. Therefore, it is suggested that, related to mentioned variables for identification of its effective factors and also the benefits of disclosure of intellectual capital, some researches be done such as follows:

1. Relation between the disclosure of intellectual capital ( in its different categories and components) and conservativeness.

2. Relation between the disclosure of intellectual capital ( in its different categories and components) and Information asymmetry (price gap)
3. Relation between the disclosure of intellectual capital ( in its different categories and components) and Stock liquidity
4. Comparative and contrastive study of Iran's bourse market with that of that of other countries, focusing on destructive role of big and institutional shareholders and lack of participation of minor shareholders in the ownership structure, is also suggested.

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